Sajan, Inc.
625 Whitetail Blvd.
River Falls, WI 54022
877.426.9505 phone
715.426.0105 fax
www.sajan.com

Certification of Translation Accuracy

As a duly elected officer of Sajan, Inc., I do hereby verify and confirm that Sajan, Inc. has delivered a true and accurate translation updates for the following item(s): These updates were completed by a technically trained and certified native speaking linguist.

Re: Sajan, Inc.
Job No. 9474
Date: Friday, August 04, 2006
Client: Patterson, Thuente Skaar, & Christensen
Client Contact: Jill Price
Product Description: WO04085073A3
Languages: French to English
Reference Number: 3338.80-US-01

SAJAN, INC.

By: _____
Tracy L. Berg
Senior Account Manager

CLAIMS

1) Device intended for spraying an Overheated Liquid, in the form of very fine droplets with an average size of less than 5 microns, at a very high speed beyond the speed of sound, for the flow of vital fluids, the term Overheated Liquid relating to a liquid at a temperature To and a pressure Po greater than the saturated vapor tension Ps corresponding to To, the vapor tension Ps itself being greater than the pressure of the gaseous environment in which the liquid is sprayed, wherein it does not require the assistance of a compressed gas or of ultrasonics, does not involve elements intended to break up a liquid stream, and consists of a nozzle body (1) fixed on a base (0) allowing for the supply of the Overheated Liquid: the nozzle body having a tube (3) where the Overheated Liquid circulates, followed by a mixer head and several injectors (4) where the Overheated Liquid is sped toward a divergent release and speed attainment nozzle (5); from its entrance into this nozzle, the liquid stream partially evaporates and instantaneously bursts under the effect of its own vapor tension, forming a mixture of fine droplets and vapor.

   The generator of the divergent nozzle (5) presents a discontinuity, i.e. an angle, at its intersection with that of the injectors (4), and its exit section is sized such that the mixture is ejected from the nozzle at pressure P1 of the external environment without forming a wave of pressure in the divergent nozzle (5); the ejection speed of the mixture therefore corresponds to the maximum ejection speed.

   The slope of the generator of the divergent nozzle (5) can almost be vertical at its junction with the injectors (4).

   The divergent nozzle can be partially or completely built into an external base (0).

2) Device intended for spraying an Overheated Liquid, in the form of very fine droplets with an average size of less than 5 microns, at a very high speed beyond the speed of sound, for the flow of vital fluids, the term Overheated Liquid relating to a liquid at a temperature To and a pressure Po greater than the saturated vapor tension Ps corresponding to To, the vapor tension Ps itself being greater than the pressure of the gaseous environment in which the liquid is sprayed, wherein it does not require the assistance of a compressed gas or of ultrasonics, does not involve elements intended to break up a liquid stream, and consists of a nozzle body (1) fixed on a base (0) allowing for the supply of the Overheated Liquid: the nozzle body having a tube (3) where the Overheated Liquid circulates, followed by a mixer head and annular opening section (16), which we will call Annular Injector, where the

Overheated Liquid is sped toward a divergent release and speed attainment nozzle (5); from its entrance into this nozzle, the liquid stream partially evaporates and instantaneously bursts under the effect of its own vapor tension, forming a mixture of fine droplets and vapor.

The generator of the divergent nozzle (5) presents a discontinuity, i.e. an angle, at its intersection with that of the annular injector (16), and its exit section is sized such that the mixture is ejected from the nozzle at pressure P1 of the external environment without forming a wave of pressure in the divergent nozzle (5); the ejection speed of the mixture therefore corresponds to the maximum ejection speed.

The annular injector is made up of the free space contained between an opening (16), cylindrical for example, and an injection core (8); the method of fastening the injection core to the nozzle body allows the liquid to circulate in the nozzle.

The slope of the generator of the divergent nozzle (5) can, at its junction with generator of the opening (16), be perpendicular to the axis of this opening, as shown in Figure 1.A.

If necessary, the divergent nozzle can be partially or completely built into an external base (0).

3) Device intended for spraying an Overheated Liquid, in the form of very fine droplets with an average size of less than 5 microns, at a very high speed beyond the speed of sound, for the flow of vital fluids, and allowing, for the same spray nozzle, for modification at will of the flow, Pressure Po, or Temperature To of the incoming Overheated Liquid, as well as the Pressure P1 of the gaseous environment in which the liquid is sprayed, all while preserving a maximum ejection speed of the spray droplets exiting the device, the term Overheated Liquid relating to a liquid at a temperature To and a pressure Po greater than the saturated vapor tension Ps corresponding to To, the vapor tension Ps itself being greater than the pressure of the gaseous environment in which the liquid is sprayed, wherein it does not require the assistance of a compressed gas or of ultrasonics, does not involve elements intended to break up a liquid stream, and consists of a nozzle body (1) fixed on a base (0) allowing for the supply of the Overheated Liquid: the nozzle body having a tube (3) where the Overheated Liquid circulates, followed by a mixer head and several injectors (4) where the Overheated Liquid is sped toward a divergent release and speed attainment nozzle (5); from its entrance into this nozzle, the liquid stream partially evaporates and instantaneously bursts under the effect of its own vapor tension, forming a mixture of fine droplets and vapor.

A profiled core (11), which can slide on the axis of the divergent nozzle (5), enabling, by its position, regulation of the exit section of this nozzle; the continuous and unchanging profiles of the generators of the divergent nozzle (5) and of the core (11) allowing the preservation of an increasing opening section between (5) and (11) along the axis of the nozzle, whatever the position of the core (11).

The generator of the divergent nozzle (5) presents a discontinuity, i.e. an angle, at its intersection with that of the injectors (4).

The core (11) is supported by a mechanism allowing for external regulation of its position relative to the nozzle (5).

Whatever the liquid's flow, its pressure Po, and its temperature To, and whatever the pressure P1 of the gaseous environment in which the liquid is sprayed, the exit section of the nozzle can be regulated such that the mixture is ejected from the nozzle at pressure P1 without forming a wave of pressure in the divergent nozzle (5); the ejection speed of the mixture therefore corresponds to the maximum ejection speed.

The slope of the generator of the divergent nozzle (5) can, at its junction with generator of the opening (16), be perpendicular to the axis of this opening.

If necessary, the divergent nozzle can be partially or completely built into an external base (0).

4) Device according to claim 3, wherein the positioning of the core (11) in the divergent nozzle (5) is automated, the automation system acting on the support mechanism and the positioning of the core (11) such that the exit section of the nozzle corresponds to the flow, Pressure Po, and Temperature To of the Overheated Liquid at the entry, as well as the Pressure P1 of the gaseous environment in which the liquid is sprayed, so that the ejection speed of the sprayed droplets exiting the device is maximal; the automation system can equally be incorporated on the spray nozzle, or outside.

5) Device according to claims 3 and 4 wherein it becomes possible to increase their capacity and to facilitate their manufacture through replacing the cylindrical injectors (4) with an annular injector (16). The annular injector is made up of the free space contained between an opening (16), cylindrical for example, and an injection core (8); the method of fastening the injection core to the nozzle body allows the liquid to circulate in the nozzle.

6) Device according to claims 2 and 5 wherein it becomes possible to increase their flexibility of use through replacing the injection core (8) of the annular injector with a profiled injection core (15) of increasing variable section in the direction of the flow and able to slide on the axis of the opening (4), the exit section of the injector then being able to be regulated by adjusting the position of the profiled injection core (15) in relation to the opening (4).